

PERMIT NO.:

MTG 010138

Date Rec'd.:

1/28/15

Amount Rec'd.:

0

Check No.:

Rec'd By:

LS



Montana Department of

ENVIRONMENTAL QUALITY

WATER PROTECTION BUREAU

RECEIVED

JAN 28 2015

DEQ/WPB

COMPLIANCE DIV.

FORM
NOI

Notice of Intent (NOI) for Montana Pollution Discharge Elimination System Application for New and Existing Concentrated Animal Feeding Operations

The Application form is to be completed by the owner or operator of a Concentrated Animal Feeding Operation (CAFO) or Aquatic Animal Production Facility. Please read the attached instructions before completing this form. You must print or type legibly; forms that are not legible or are not complete will be returned. You must maintain a copy of the completed application form for your records.

Section A - Application Status (Check one):

- ☐ New No prior application submitted for this site.
☒ Resubmitted Permit Number: MTG 0 1 0 1 3 8
☐ Renewal Permit Number: MTG _____
☐ Modification Permit Number: MTG _____

RECEIVED

JAN 28 2015

DEQ/WPB

PERMITTING & COMPLIANCE DIV.

Section B - Facility or Site Information (See instruction sheet.):

Site Name Valley Vu FeedlotSite Location 25-25N-59ENearest City or Town FairviewCounty RichlandLatitude 47.88761Longitude -104.04604Date Facility began operation? 1970Is this facility or site located on Indian Lands? ☐ Yes ☒ No

Section C - Applicant (Owner/Operator) Information:

Owner or Operator Name Prewitt Land & LivestockMailing Address 35026 Hwy 201City, State, and Zip Code Fairview, MT 59221Phone Number 406-747-3314Is the person listed above the owner? ☐ Yes ☒ NoStatus of Applicant (Check one) ☐ Federal ☐ State ☒ Private ☐ Public ☐ Other (specify) _____

COPY

Section D - Existing or Pending Permits, Certifications, or Approvals: ☐ None☐ MPDES MTG010138☐ RCRA _____☐ PSD (Air Emissions) _____☐ Other _____☐ 404 Permit (dredge & fill) _____☐ Other _____**Section E - Standard Industrial Classification (SIC) Codes:**

Provide at least one SIC code which best reflects the activity of project described in Section H.

Code	A. Primary	Code	B. Second
1	211	2	
Code	C. Third	Code	D. Fourth
3		3	

Section F - Facility or Site Contact Person/Position:Name and Title, or Position Title Chantz Prewitt (Manager)Mailing Address 35026 Hwy 201City, State, and Zip Code Fairview, MT 59221Phone Number 406-747-3314**Section G - Receiving Surface Waters(s):**

Outfall/Discharge Locations: For each outfall, List latitude and longitude to the nearest second and the name of the receiving waters

Outfall Number	Latitude	Longitude	Receiving Surface Waters
001	47.8961	-104.04604	4 mile
002			
003			
004			
005			

Map: Attach a topographic map extending one mile beyond the property boundaries or the site activity identified in Section B depicting the facility or activity boundaries, major drainage patterns, and the receiving surface waters, stated above. Also identify the specific location of the production area, and land application area(s).

Is the receiving water on the 303(d) list for nutrients (nitrogen and/or phosphorus)

☐ Yes ☒ No

Maps attached

Section H – Concentration Animal Feeding Operation Characteristics

Waste Production, Storage and Disposal

	Animal type	Number in Open Confinement	Number Housed Under Roof
<input type="checkbox"/>	Mature Dairy Cows		
<input type="checkbox"/>	Dairy Heifers		
<input type="checkbox"/>	Veal Calves		
<input checked="" type="checkbox"/>	Cattle (not dairy or veal)	9500	
<input type="checkbox"/>	Swine (55 lbs or over)		
<input type="checkbox"/>	Swine (55 lbs or under)		
<input type="checkbox"/>	Horses	10	
<input type="checkbox"/>	Sheep or Lambs		
<input type="checkbox"/>	Turkeys		
<input type="checkbox"/>	Chickens (broilers)		
<input type="checkbox"/>	Chickens (layers)		
<input type="checkbox"/>	Ducks		
<input type="checkbox"/>	Other (Specify: _____)		
<input type="checkbox"/>	Other (Specify: _____)		
<input type="checkbox"/>	Other (Specify: _____)		

Manure, Litter and/or Wastewater Production and Use.

How much manure, litter, and process wastewater is generated annually by the facility?

Solid (tons): 15,459 Liquid/Slurry (gallons): 977,553

If land applied, how many acres of land under control of the permit applicant are available to apply the manure, litter, or process wastewater generated from the facility? (Note: Do not include setback distances in available acreage)

2550 Acres

How much manure, litter, and process wastewater is transferred to other persons per year? (estimated) Solid (tons): 7575 Liquid/Slurry (gallons): _____

Were the containment structures built after February 2006?

☒ Do the waste containment structures have 10 feet of separation between the pond bottom and any bedrock formations? Yes

☒ Do the waste containment structures have 4 feet of separation from the pond bottom and any ground water? Yes

☐ Were any of the waste containment structures built within 500 feet of any existing well? No

Type of Containment/Storage	Total Capacity	Units (gallons or tons)	Days of Storage
<input type="checkbox"/> Anaerobic Lagoon			
<input checked="" type="checkbox"/> Storage Pond #1	5.7 AC/FT		
<input checked="" type="checkbox"/> Storage Pond #2	7.3 AC/FT		
<input checked="" type="checkbox"/> Storage Pond #3	3.67 AC/FT		
<input checked="" type="checkbox"/> Storage Pond #4	2.87 AC/FT		
<input type="checkbox"/> Storage Pond #5			
<input type="checkbox"/> Above Ground Storage Tank			
<input type="checkbox"/> Below Ground Storage Tank #1			
<input type="checkbox"/> Below Ground Storage Tank #2			
<input type="checkbox"/> Underfloor Pits			
<input type="checkbox"/> Roofed Storage Shed			
<input type="checkbox"/> Concrete Pad			
<input type="checkbox"/> Impervious Soil Pad			
<input type="checkbox"/> Other (Specify: _____)			
<input type="checkbox"/> Other (Specify: _____)			

Physical Data for CAFO

Nutrient Management Plan

All Concentrated Animal Feeding Operations seeking permit coverage after July 31, 2007 are required to complete and implement a Nutrient Management (NMP). The NMP must be submitted to the Department using the form provided by the Department (Form NMP). Check the box below that applies and provide the required information. The NMP must be developed in accordance with ARM 17.30.1334 and implemented upon the effective date of permit coverage. (Check One)

☒ Does the facility have an NMP?

Date NMP was developed: 2006

Date NMP was last modified: 2013

☐ NMP has not been prepared; provide detailed explanation below

Section I – Supplemental Information

Section J - CERTIFICATION**Permittee Information:**

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)

Prewitt Land & Livestock LLC - Chantz Prewitt

B. Title (Type or Print)

Manager

C. Phone No.**D. Signature****E. Date Signed**

1/23/15

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form (NOI) and the applicable fee to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

RECEIVED

JAN 28 2015

DEQWPB
PERMITTING & COMPLIANCE DIV.

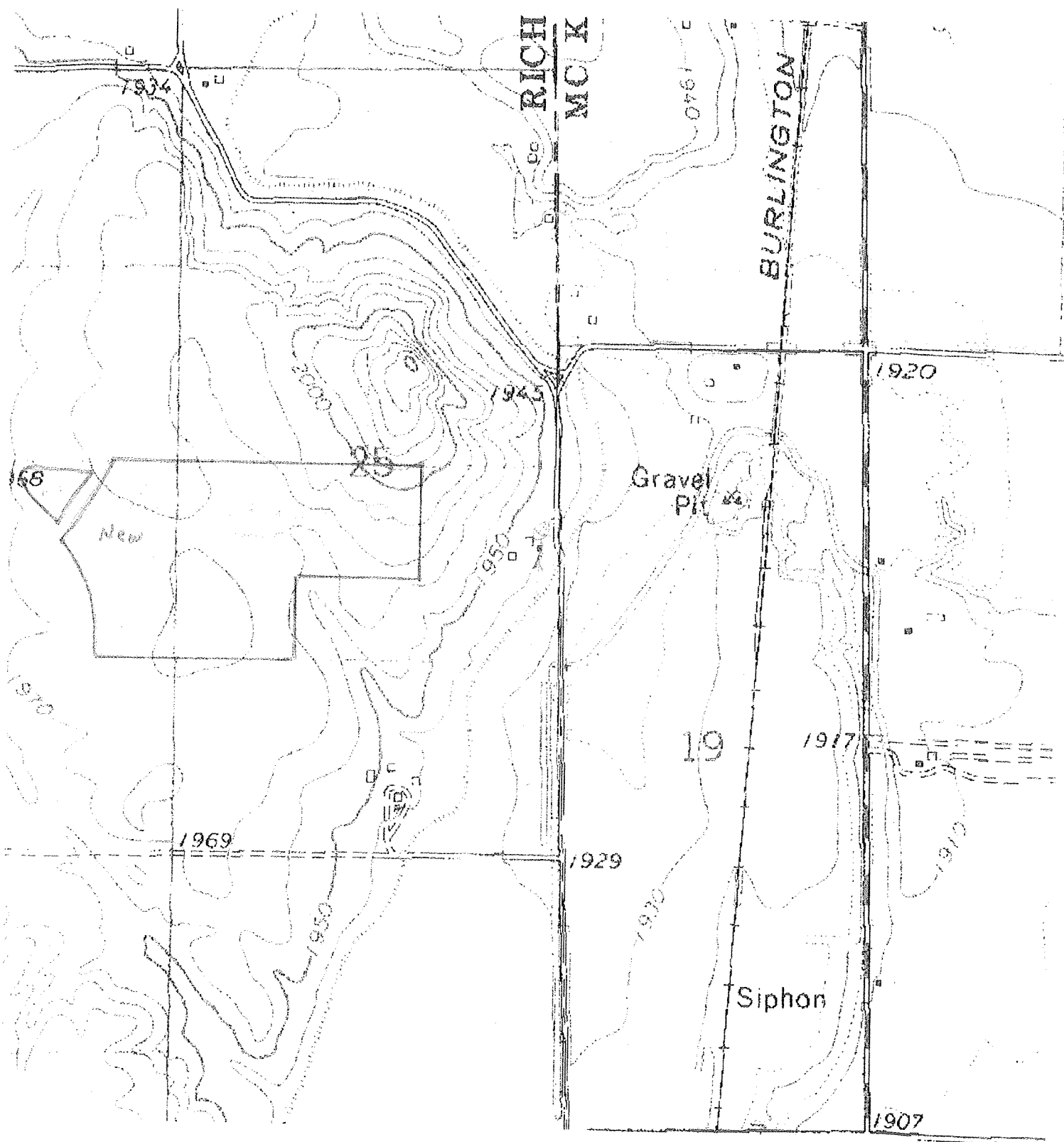
4 mile Creek
Outfall

Discharge through pump
with screens to pivots. waste
water is mixed with irrigation
water to meet crop nutrient needs.



DRG_S_MT083

2-5-97



Scale 1:10600



AGENCY USE ONLY

PERMIT NO.:

MTG-016138

Date Rec'd.:

1/28/15

Amount Rec'd.:

0

Check No.:

Rec'd By:

ks

RECEIVED

JAN 28 2015

DEQ/WPB

PERMITTING & COMPLIANCE DIV.



Montana Department of

ENVIRONMENTAL QUALITY

WATER PROTECTION BUREAU

FORM
NMP

Nutrient Management Plan

READ THIS BEFORE COMPLETING FORM: Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For filling out Form NMP," found at the back of this form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your NOI-CAFO. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. The 2013 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or <http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp>

Section A – NMP Status:

- ☐ New No prior NMP submitted for this site.
- ☐ Resubmitted Previous NMP found incomplete.
- ☒ Modification Change or update to existing NMP.
- ☐ New 2014 New 2014 version of NMP.

Section B – Facility Information:

Facility Name Valley Vu Feedlot

Facility Location 25-25N-59E

Nearest City or Town Fairview County Richland

Section C – Applicant (Owner/Operator Information):

Owner or Operator Name Prewitt Land & Livestock

Mailing Address 35026 Hwy 201

City, State, and Zip code Fairview MT 59221

Facility Phone Number 406-747-3314

Email prewittland@gmail.com

Section D – NMP Minimum Elements:

1. Livestock Statistics		
Animal Type and number of animals	# of Days on Site (per year)	Annual Manure Production (tons, cu. yds. or gal)
1. Feeder Calves	150	2,932 tons
2. Feeder Calves	210	989 tons
3.		
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:

NRC5 calculation Form

head x days x .68 cu Ft/dry @ 88% moisture = tons

2. Manure Handling

a. Describe Manure handling at the facility:

Manure is stacked in pens through feeding season in pens. It is then hauled in trucks to fields in August thru October

b. Frequency of Manure Removal from confinement areas:

once / year

c. Is this manure temporarily stored in any location other than the confinement area? ☒ Yes ☐ No
If so then how and where?

Piled on the edge of the field on long distance fields by semi trucks

d. Is manure stored on impervious surface? ☒ Yes ☐ No
If yes, describe type and characteristics of this surface:

Compacted manure in pens

3. Waste Control Structures

Waste Control Structures (name/type)	Length (ft.)	Width (ft.)	Depth (ft.)	Volume (cubic ft. or gallons)	Number of days of storage
1. Main lagoon	204	134	9	5.7 ac/ft	
2. Middle "	150	150	11	7.3 ac/ft	
3. West "	186	123	6	3.67 ac/ft	
4. feed storage "	250	100	5	2.87 ac/ft	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

What is the 24 hr. 25 yr. storm event at this facility 3 to 3.5 inches

Production area: 107 acres. Type of lot (dirt or paved): dirt

Area contributing drainage form outside CAFO that enters confinement areas and waste storage, conveyance, or treatment structures: 40 acres.

What is the annual precipitation during the critical storage period 8

How much freeboard do the pond(s) have 12'

4. Disposal of Dead Animals.

Describe how dead animals are disposed of at this facility:

Buried in a pit or hauled to land fill

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:

The only clean water is from our water tanks which is diverted by pipe to Irrigation drain ditch.

6. Prohibiting Animals and Wastes from Contact with State Waters

Describe how animals and wastes are prohibited from direct contact with state waters:

All waste water goes into lagoons that are either evaporated or discharged through pivots. Animals are confined in pens and have no access to state water.

Describe how Chemicals and other contaminants are handled on-site:

Chemicals and contaminants are stored in buildings with concrete floors.

7. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural BMPS which will be used to control runoff of pollutants from facility's production area. Indicate the location of these measures. If BMPS are not installed include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above and open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

Production Area BMP's A dike was built on the south west side to divert waste to lagoon, ditch made to divert waste to feed lagoon on east side an evaporation pond built on North west corner to catch waste. all Run off from production area goes into 1 of 4 Lagoons.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's land production area. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites;

never spray irrigating waste on to frozen ground: consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

Land Application BMP's

There is grass strips around most fields, solid waste is tilled in 48 hours or as soon as possible

Buffers

☐ Yes ☒ No

Constructed Wetlands

☐ Yes ☒ No

Infiltration Field

☐ Yes ☒ No

Set backs

☒ Yes ☐ No

Other examples

Conservation Tillage

☒ Yes ☐ No

Grass Filter

☒ Yes ☐ No

Residue Management

☒ Yes ☐ No

Terrace

☐ Yes ☒ No

8. Implementation, Operation, Maintenance and Record Keeping – Guidance

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part 2 of the permit.

Has a guidance document been developed for the facility? ☒ Yes ☐ No

Certify the document address the following requirements:

Implementation of the NMP:

☒ Yes ☐ No

Facility operation and maintenance:

☒ Yes ☐ No

Record keeping and reporting

☒ Yes ☐ No

Sample collection and analysis:

☒ Yes ☐ No

Manure transfer

☒ Yes ☐ No

Provide name, date and location of most recent documentation:

Fehringer Agricultural Consulting CWMF Plan Book

If your answer to any of the above question is no, provide explanation:

Section E - Land Application

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

- ☒ Yes If yes, then the information requested in Section E must be provided.
☐ No If no, then provide an explanation of how animal waste at this facility are managed.

Photos and/or Maps

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"X 17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any downgradient surface waters.
- The location of any downgradient open tile line intake structures
- The location of any downgradient sinkholes
- The location of any downgradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

Land Application Equipment Calibration

Describe the type of equipment used to land apply wastes and the calibration procedures:

2003 International truck with McKee Spreaderbox figured at 15 ton / load

Manure Sampling and Analysis Procedures

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining rates for manure, litter, and process wastewater.

Manure Sample collection will occur according to ARM 17.30.1334

Other (describe)

Our Agronomist sends the samples in to ~~AgSource~~ Laboratory

Soil Sampling and Analysis Procedures

Representative soil (composite) samples from the top 6 inches layer of soil for each field where manure will be applied must be analyzed for phosphorus content at least once every three years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater

Soil samples collection will occur according the methods in ARM 17.30.1334

Other (describe)

We soil sample all fields that we farm a sample is enclosed.

Phosphorus Risk Assessment

The permittee shall assess the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or

may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

Method Used

Indicate which method will be used to determine phosphorus application:

Method A – Representative Soil Sample

Method B – Phosphorus Index

Method A – Representative Soil Sample

- Obtain one or more representative soil sample(s) from the field per 17.30.1334
- Have the sample analyzed for Phosphorus by a qualified lab. The "Olsen P test" must be used for the analysis, and the result must be reported in parts per million (ppm)
- Using the results of the Olsen P test, determine application basis according to the Table below.

Soil Test

Olsen P Soil Test Results (ppm)	Application Basis
<25.0	Nitrogen Needs of Crop
25.1 - 100.0	Phosphorus Needs of Crop
100.0 – 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application allowed

Method B – Phosphorus Index

- Complete a phosphorus Index according to the crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections in Appendix A, please refer to the method as described in Natural Resource Conservation Service (NRCS), Agronomy Technical Note MT-77 (rev3), January 2006.
- Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

Total Phosphorus

Total Phosphorus Index Value	Site Vulnerability to Phosphorus Loss
<11	Low
11-21	Medium
22-43	High
>43	Very High

- Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	Application Basis
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

The applicant has 2 ways in which to report how manure or process wastewater application rates can be reported to DEQ.

1. Linear Approach. Expresses rates of application as pounds of nitrogen and phosphorus. CAFOs selecting the linear approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:

- The maximum application rate (pounds/acre/year of nitrogen and phosphorus) from manure, litter, and process wastewater.
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. [If a state does not have an N transport risk assessment, the NMP must document any basis for assuming that nitrogen will be fully used by crops.] The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted or any other uses of a field such as pasture or fallow fields.
- The realistic annual yield goal for each crop or use identified for each field.
- The nitrogen and phosphorus recommendations from in ARM 17.30.1334 (technical standard) for each crop or use identified for each field.
- Credits for all residual nitrogen in each field that will be plant-available.
- Consideration of multi-year phosphorus application. For any field where nutrients are applied at a rate based on the crop phosphorus requirement, the NMP must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement.
- All other additions of plant available nitrogen and phosphorus (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen).
- The form and source of manure, litter, and process wastewater to be land-applied.
- The timing and method of land application. The NMP also must include storage capacities needed to ensure adequate storage that accommodates the timing indicated.
- The methodology that will be used to account for the amount of nitrogen and phosphorus in the manure, litter, and wastewater to be applied.
- Any other factors necessary to determine the maximum application rate identified in accordance with this Linear Approach.

2. Narrative Rate Approach. Expresses a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process wastewater to be land applied. CAFOs selecting the narrative rate approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:

- The maximum amounts of nitrogen and phosphorus that will be derived from all sources of nutrients (pounds/acre for each crop and field).
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted in each field or any other uses of a field such as pasture or fallow fields, including alternative crops if applicable. Any alternative crops included in the NMP must be listed by field, in addition to the crops identified in the planned crop rotation for that field.
- The realistic annual yield goal for each crop or use identified for each field for each year, including any alternative crops identified.
- The nitrogen and phosphorus recommendations from *[the permitting authority to specify acceptable sources]* for each crop or use identified for each field, including any alternative crops identified.
- The methodology (including formulas, sources of data, protocols for making determination, etc.) and actual data that will be used to account for: (1) the results of soil tests required by Parts II.A.4.b and III.A.3.g of this

permit, (2) credits for all nitrogen in the field that will be plant- available, (3) the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied, (4) consideration of multi-year phosphorus application (for any field where nutrients are applied at a rate based on the crop phosphorus requirement, the methodology must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement), (5) all other additions of plant available nitrogen and phosphorus to the field (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen), (6) timing and method of land application, and (7) volatilization of nitrogen and mineralization of organic nitrogen.

- Any other factors necessary to determine the amounts of nitrogen and phosphorus to be applied in accordance with the Narrative Rate Approach.

- NMPs using the Narrative Rate Approach must also include the following projections, which will not be used by the permitting authority in establishing site-specific permit terms:

- i. Planned crop rotations for each field for the period of permit coverage.
- ii. Projected amount of manure, litter, or process wastewater to be applied.
- iii. Projected credits for all nitrogen in the field that will be plant-available.
- iv. Consideration of multi-year phosphorus application.
- v. Accounting for other additions of plant-available nitrogen and phosphorus to the field.
- vi. The predicted form, source, and method of application of manure, litter, and process wastewater for each crop

- If the receiving water is on the 303(d) list for nutrients then the narrative rate approach must be used.

- a. For the Linear Approach the permittee will complete the Nutrient Budget Worksheet, below, for the next 5 years to which manure or process waste water is or may be applied. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Field identification: <u>DM/CP1</u> Year: <u>2014</u> Crop: <u>Soybeans</u>					
Expected Crop Yield: <u>60 bushel</u>					
Phosphorus index results or Phosphorus application from soil test: <u>15</u>					
Method of Application: <u>Spread</u>					
When will application occur: <u>Sept / Aug</u>					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	—	<u>62</u>	
2	(-)	Credits from previous legume crops, lbs/ac	—	<u>0</u>	
3	(-)	Residuals from past manure production lbs/acre	—	<u>0</u>	
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	—	<u>0</u>	
5	(-)	Nutrients supplied in irrigation water, lbs/acre	—	<u>0</u>	
6		= Additional Nutrients Needed, lbs/acre	—	<u>62</u>	
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	<u>8.4</u>	<u>6</u>	
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	<u>.6</u>	<u>1</u>	
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	<u>151</u>	<u>180</u>	
10		Additional Nutrients needed, lbs/acre (calculated above)	<u>0</u>	<u>0</u>	
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	<u>8.4</u>	<u>6</u>	
12		= Manure Application Rate, tons/acre or 1000 gal/acre	<u>25</u>	<u>25</u>	

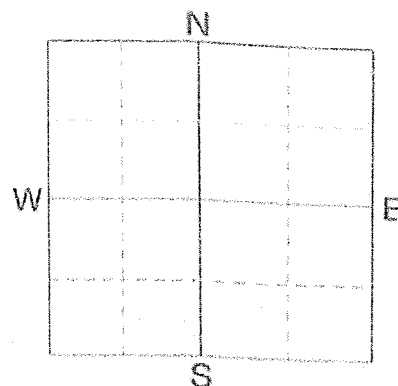
Comments:



Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID
SAMPLE ID **JIM KP1**
FIELD NAME
COUNTY
TWP RANGE
SECTION QTR ACRES **140**
PREV. CROP **Corn-Silage**



SUBMITTED FOR:
LUNDERBY PREWITT

SIDNEY, MT

59270

SUBMITTED BY: **FA2371**
HORIZON RESOURCES-FAIRVIEW
202 2ND ST N
BOX 392
FAIRVIEW, MT 59221

REF # **17198726** BOX # **0**
LAB # **NW76137**

Date Sampled **09/29/2014**

Date Received **09/30/2014**

Date Reported **1/23/2015**

Nutrient In The Soil		Interpretation				1st Crop Choice			2nd Crop Choice			3rd Crop Choice				
Nitrate	0-6"	26 lb/ac 45 lb/ac	VLow	Low	Med	High	Soybeans			Soybeans			Soybeans			
	6-24"						YIELD GOAL			YIELD GOAL			YIELD GOAL			
							40 BU			50 BU			60 BU			
	0-24"		71 lb/ac					SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
								Broadcast/Maint.			Broadcast/Maint.			Broadcast/Maint.		
Olsen	12 ppm					LB/ACRE	APPLICATION		LB/ACRE	APPLICATION		LB/ACRE	APPLICATION			
Phosphorus		187 ppm					N	***		N	***		N	***		
Potassium						P ₂ O ₅	42	Broadcast	P ₂ O ₅	52	Broadcast	P ₂ O ₅	62	Broadcast		
Chloride	0-24"	124 lb/ac				K ₂ O	60	Broadcast	K ₂ O	75	Broadcast	K ₂ O	90	Broadcast		
	0-6"	44 lb/ac				Cl	0		Cl	0		Cl	0			
Sulfur	6-24"	180 lb/ac				S	0		S	0		S	0			
Boron		1.1 ppm				B	0		B	0		B	0			
Zinc		1.10 ppm				Zn	0		Zn	0		Zn	0			
Iron		7.2 ppm				Fe	0		Fe	0		Fe	0			
Manganese		2.3 ppm				Mn	0		Mn	0		Mn	0			
Copper		1.09 ppm				Cu	0		Cu	0		Cu	0			
Magnesium		547 ppm				Mg	0		Mg	0		Mg	0			
Calcium		5186 ppm				Lime	0		Lime	0		Lime	0			
Sodium		144 ppm														
Org.Matter		2.8 %														
Carbonate(CCE)		8.2 %														
	0-6"	0.33 mmho/cm														
	6-24"	0.3 mmho/cm														

General Comments: Texture is not estimated on high pH soils.

Crop 1: Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is high based on the salt and carbonate levels. Crop Removal: P2O5 = 35 K2O = 60 AGVISE Broadcast/Maintenance guidelines will build P & K test levels to the high range over several years and then maintain them.

Crop 2: Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is high based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Broadcast/Maintenance guidelines will build P & K test levels to the high range over several years and then maintain them.

Crop 3: Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is high based on the salt and carbonate levels. Crop Removal: P2O5 = 53 K2O = 90 AGVISE Broadcast/Maintenance guidelines will build P & K test levels to the high range over several years and then maintain them.

Nutrient Budget Worksheet

Field identification: <i>TMP2</i>		Year: <i>2014</i>	Crop: <i>Sugar Beets</i>	
Expected Crop Yield: <i>30 ton</i>				
Phosphorus index results or Phosphorus application from soil test: <i>15</i>				
Method of Application: <i>Spread</i>				
When will application occur: <i>September</i>				
Nutrient Budget		Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	<i>194</i>	<i>56</i>
2	(-)	Credits from previous legume crops, lbs/ac	<i>0</i>	<i>0</i>
3	(-)	Residuals from past manure production lbs/acre	<i>0</i>	<i>0</i>
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	<i>0</i>	<i>0</i>
5	(-)	Nutrients supplied in irrigation water, lbs/acre	<i>0</i>	<i>0</i>
6		= Additional Nutrients Needed, lbs/acre	<i>194</i>	<i>56</i>
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	<i>8.4</i>	<i>6</i>
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	<i>.6</i>	<i>1</i>
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	<i>151</i>	<i>180</i>
10		Additional Nutrients needed, lbs/acre (calculated above)	<i>194</i>	<i>0</i>
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	<i>8.4</i>	<i>6</i>
12		= Manure Application Rate, tons/acre or 1000 gal/acre	<i>30</i>	<i>30</i>

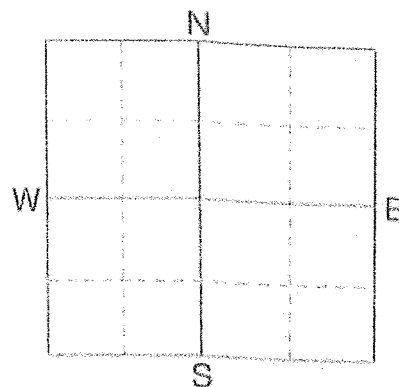
Comments:



Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID
SAMPLE ID **TMP 2**
FIELD NAME
COUNTY
TWP RANGE
SECTION QTR ACRES **60**
PREV. CROP **Barley**



SUBMITTED FOR:
LUNDERBY - PREWITT

SIDNEY, MT 59270

SUBMITTED BY: **FA2371**
HORIZON RESOURCES-FAIRVIE
202 2ND ST N
BOX 392
FAIRVIEW, MT 59221

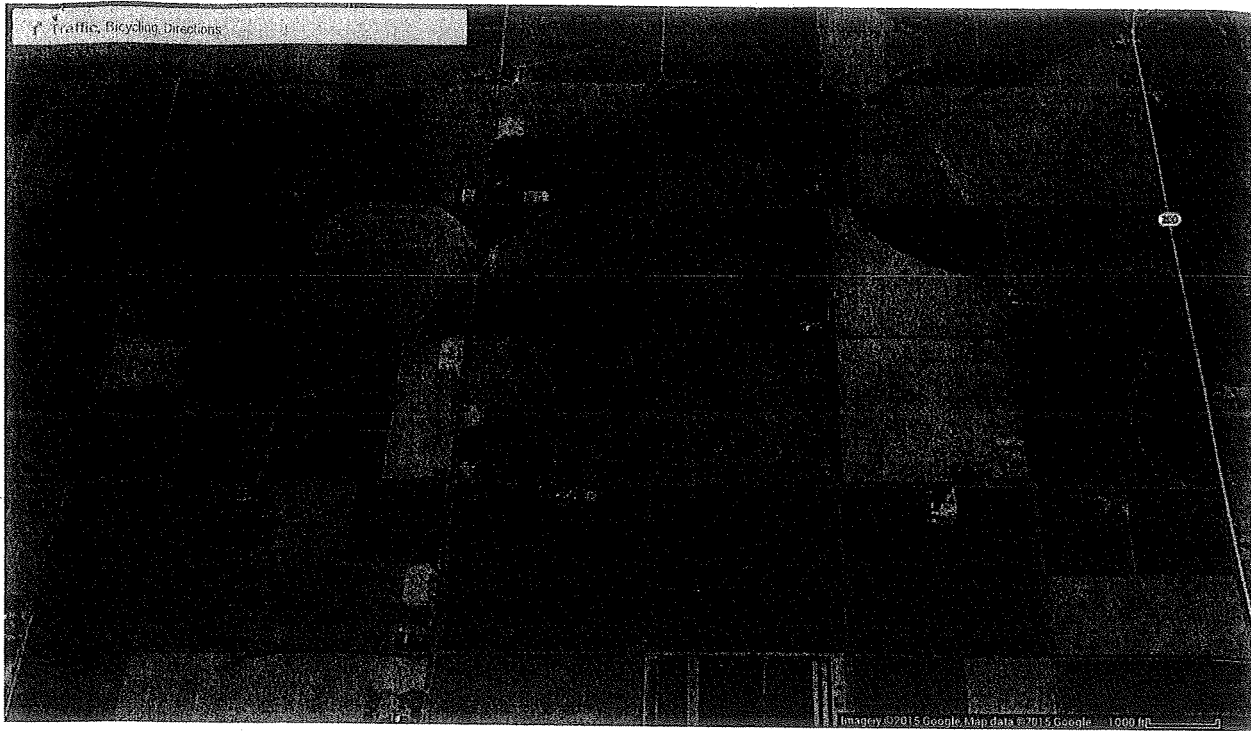
REF # **14736817** BOX # **0**
LAB # **NW39007**

Date Sampled **08/13/2014**

Date Received **08/15/2014**

Date Reported **1/23/2015**

Nutrient In The Soil		Interpretation				1st Crop Choice			2nd Crop Choice			3rd Crop Choice							
Nitrate	0-6" 6-24"	10 lb/ac 6 lb/ac	Very Low	Low	Med	High	S. Beets 7 lbs			S. Beets 7 lbs			S. Beets 7 lbs						
	0-24"	16 lb/ac	***				YIELD GOAL			YIELD GOAL			YIELD GOAL						
							27 Tons			29 Tons			30 Tons						
							SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES						
							Broadcast/Maint.			Broadcast/Maint.			Broadcast/Maint.						
Olsen	15 ppm	*****	*****	*****	*****	LB/ACRE	APPLICATION		LB/ACRE	APPLICATION		LB/ACRE	APPLICATION						
Phosphorus	253 ppm	*****	*****	*****	*****	N	173		N	187		N	194						
Potassium	464 lb/ac	*****	*****	*****	*****	P ₂ O ₅	50	Broadcast	P ₂ O ₅	54	Broadcast	P ₂ O ₅	56	Broadcast					
Chloride	120 +lb/ac 360 +lb/ac	*****	*****	*****	*****	K ₂ O	0		K ₂ O	0		K ₂ O	0						
Sulfur	2.1 ppm	*****	*****	*****	*****	Cl	0		Cl	0		Cl	0						
Boron	1.14 ppm	*****	*****	*****	*****	S	0		S	0		S	0						
Zinc	13.4 ppm	*****	*****	*****	*****	B	0		B	0		B	0						
Iron	1.8 ppm	*****	*****	*****	*****	Zn	0		Zn	0		Zn	0						
Manganese	1.52 ppm	*****	*****	*****	*****	Fe	0		Fe	0		Fe	0						
Copper	1055 ppm	*****	*****	*****	*****	Mn	0		Mn	0		Mn	0						
Magnesium	6104 ppm	*****	*****	*****	*****	Cu	0		Cu	0		Cu	0						
Calcium	613 ppm	*****	*****	*****	*****	Mg	0		Mg	0		Mg	0						
Sodium	2.8 %	*****	*****	*****	*****	Lime	0		Lime	0		Lime	0						
Org.Matter	2.6 %	*****	*****	*****	*****	Soil pH			Buffer pH			Cation Exchange Capacity			% Base Saturation (Typical Range)				
Carbonate(CCE)	2.5 mmho/cm 2.78 mmho/cm	*****	*****	*****	*****										% Ca				
Sol. Salts	0-6" 6-24"	2.5 mmho/cm 2.78 mmho/cm	*****	*****	*****	*****	0-6" 8.1 6-24" 8.5		42.6 meq	(65-75) 71.6	(15-20) 20.6	(1-7) 1.5	(0-5) 6.3	(0-5)					

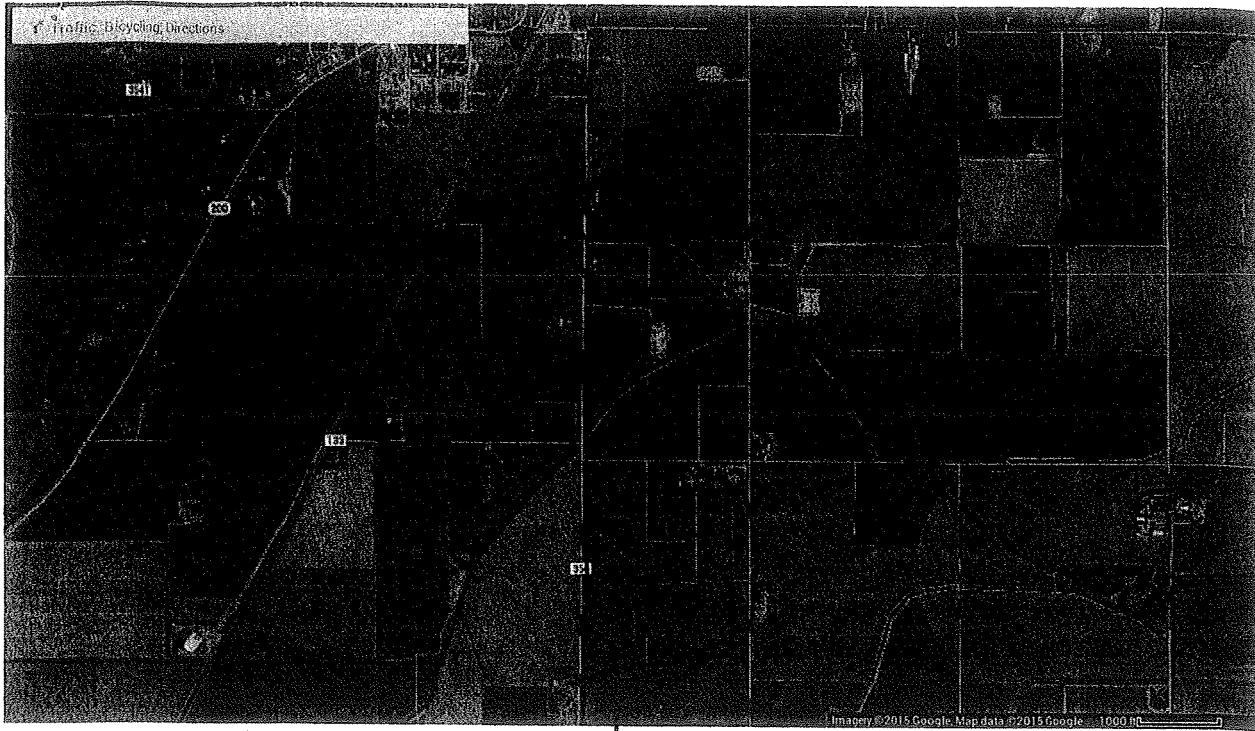


219 acres
Ketterling

fields have grass strips around them

Manure was spread with McKee truck
box spreaders.

More manure was spread on neighbor's fields



100 acres

Section F - CERTIFICATION

Permittee Information: This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)

Chantz Prewitt

B. Title (Type or Print)

Manager

C. Phone No.

D. Signature

Chantz Prewitt

E. Date Signed

1-27-15

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form and the applicable fee to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

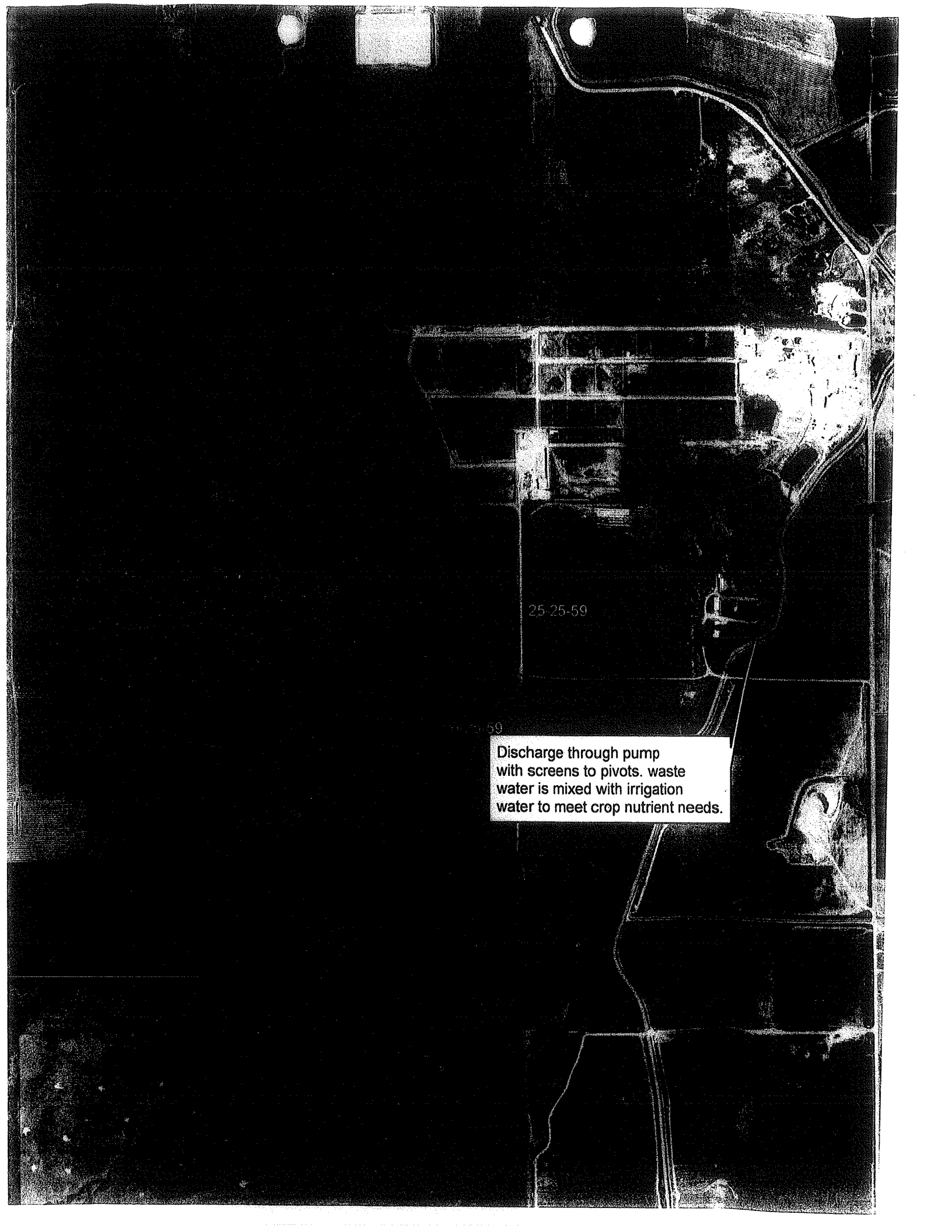
RECEIVED
JAN 28 2015
DEQ/WPB
PERMITTING & COMPLIANCE DIV.

Appendix A: Phosphorus Index Worksheet (Complete for each field and crop)

Field:	Crop:					Year:		
Field Category Factor	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Risk Value (0,1,2,4,8)	Weight Factor	Weight Risk
Soil Erosion	NA	<5 tons/as/yr	5-10 ton/ac/yr	10-15 tons/ac/yr	QA> 10 for erodible soils		X 1.5	
Furrow Irrigation Erosion	N/A	Tail water recovery, QS>6 very erodible soils, or QS>10 other soils	QS> for erosion resistant soil	QS> for erodible soils	QA>6 for very erodible soils		X 1.5	
Sprinkler Irrigation Erosion	All fields 0-3% slope, all sandy fields or field evaluation indicates little or no runoff large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8% large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes		X 1.5	
Runoff Class	Negligible	Very Low or Low	Medium	High	Very High		X 0.5	
Olson Soil Test P	-----	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm		X 0.5	
Commercial P Fertilizer Application Method	None Applied	Placed with Planter or injection deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop emerges	Surface applied to pasture or >3 months before crop emerges		X 1.0	
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0	
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied to pasture or >3 months before crop emerges		X 1.0	
Organic P Source Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0	
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1,000 feet, or functioning grass waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or application are directly into concentrated surface water flow areas.		X 1.0	
Total Phosphorus Index Value:								

Appendix A: Phosphorus Index Worksheet (Complete for each field and crop)

Field:	Crop:					Year:			
Field Category Factor	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Risk Value (0,1,2,4,8)	Weight Factor	Weight Risk	
Soil Erosion	NA	<5 tons/as/yr	5-10 ton/ac/yr	10-15 tons/ac/yr	QA> 10 for erodible soils		X 1.5		
Furrow Irrigation Erosion	N/A	Tail water recovery, QS>6 very erodible soils, or QS>10 other soils	QS> for erosion resistant soil	QS> for erodible soils	QA>6 for very erodible soils		X 1.5		
Sprinkler Irrigation Erosion	All fields 0-3% slope, all sandy fields or field evaluation indicates little or no runoff large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8% large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes		X 1.5		
Runoff Class	Negligible	Very Low or Low	Medium	High	Very High		X 0.5		
Olson Soil Test P	-----	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm		X 0.5		
Commercial P Fertilizer Application Method	None Applied	Placed with Planter or injection deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop emerges	Surface applied to pasture or >3 months before crop emerges		X 1.0		
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0		
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied to pasture or >3 months before crop emerges		X 1.0		
Organic P Source Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0		
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1,000 feet, or functioning grass waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or application are directly into concentrated surface water flow areas.		X 1.0		
Total Phosphorus Index Value:									



25-25-59

Discharge through pump
with screens to pivots. waste
water is mixed with irrigation
water to meet crop nutrient needs.

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

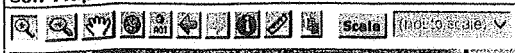
Map Unit Legend

McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
16	Ridgelawn silt loam, slightly wet, 0 to 2 percent slopes	8.2	9.1%
20	Scorio silty clay, slightly wet, 0 to 2 percent slopes	26.2	28.9%
95	Havrelon silty clay, slightly wet, 0 to 2 percent slopes	34.4	38.0%
195	Havrelon silty clay loam, saline, 0 to 1 percent slopes	21.0	23.2%
213	Havrelon silt loam, slightly wet, 0 to 2 percent slopes	0.8	0.9%
Totals for Area of Interest		90.6	100.0%

Prewitt/Miller

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
20	Scorio silty clay, slightly wet, 0 to 2 percent slopes	31.1	29.7%
95	Havrelon silty clay, slightly wet, 0 to 2 percent slopes	12.4	11.8%
195	Havrelon silty clay loam, saline, 0 to 1 percent slopes	57.5	55.0%
213	Havrelon silt loam, slightly wet, 0 to 2 percent slopes	3.5	3.4%
Totals for Area of Interest		104.4	100.0%

Prewitt / Miller

[Area of Interest \(AOI\)](#)
[Soil Map](#)
[Soil Data Explorer](#)
[Download Soils Data](#)
[Shopping Cart \(Free\)](#)
[Printable Version](#)
[Add to Shopping Cart](#)


Soil Map



Warning: Soil Map may not be valid at this scale.

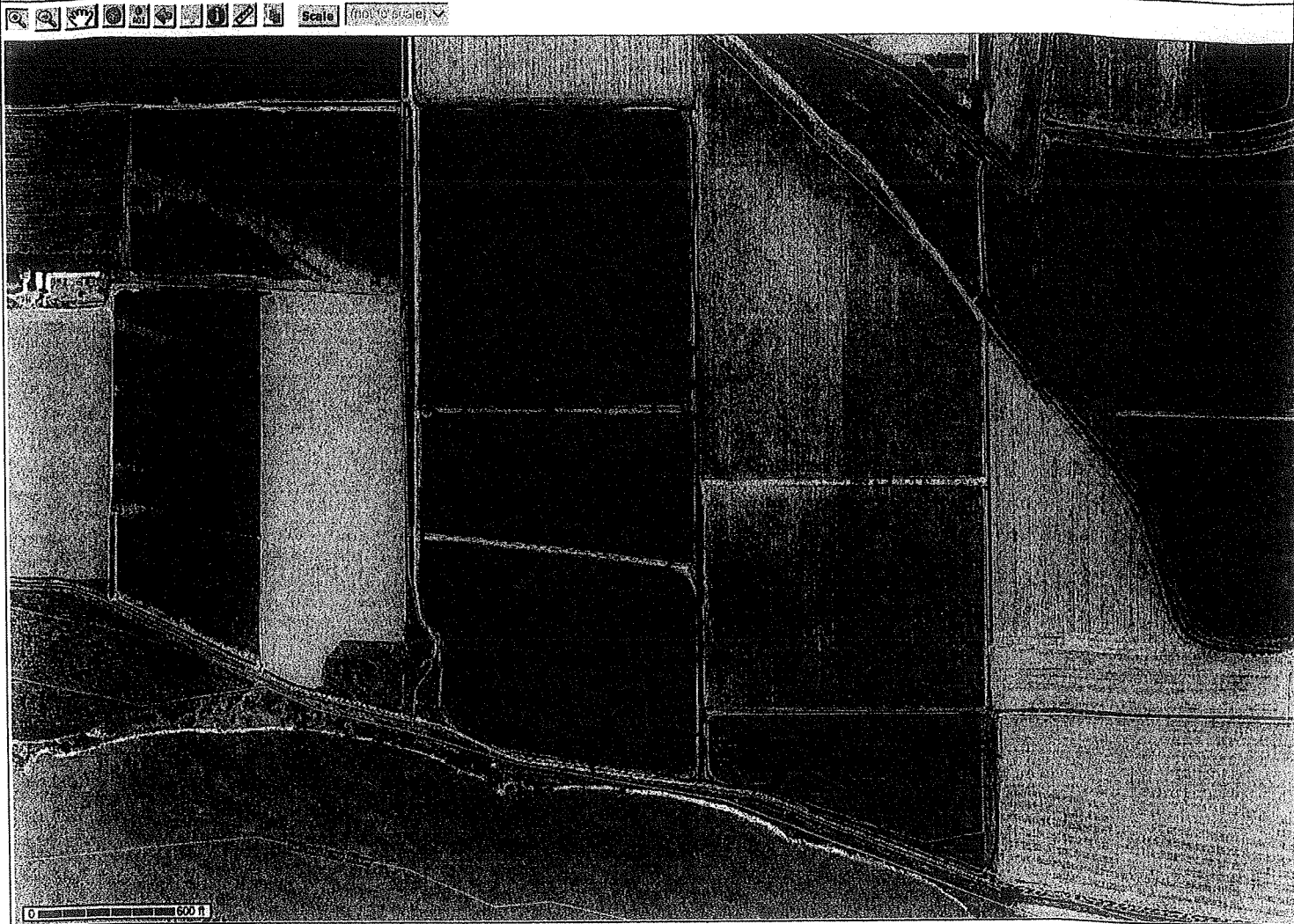
Map Unit Legend

McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
16	Ridgellawn silt loam, slightly wet, 0 to 2 percent slopes	2.3	3.7%
17	Lohler silty clay, slightly wet, 0 to 2 percent slopes	0.1	0.2%
20	Scorio silty clay, slightly wet, 0 to 2 percent slopes	32.6	53.1%
95	Havrelon silty clay, slightly wet, 0 to 2 percent slopes	20.3	33.0%
213	Havrelon silt loam, slightly wet, 0 to 2 percent slopes	6.2	10.0%
Totals for Area of Interest		61.5	100.0%

Prewitt / Miller

Soil Map



Warning: Soil Map may not be valid at this scale.

Prewitt / Miller

McKenzie County, North Dakota (ND053)

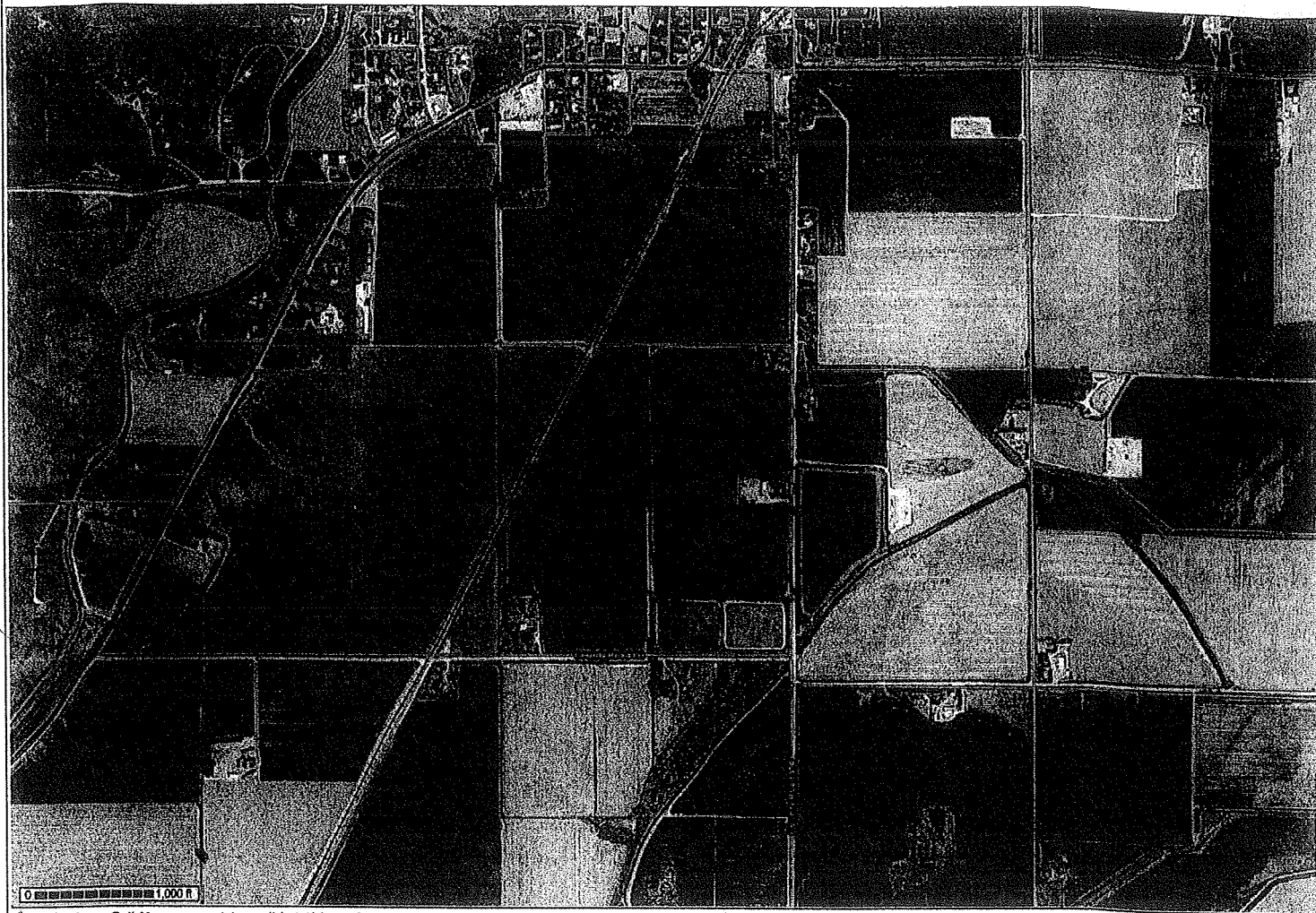


Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
10	Banks fine sandy loam, slightly wet, 0 to 2 percent slopes	0.9	0.9%
12	Trembles fine sandy loam, 0 to 2 percent slopes	2.7	2.9%
16	Ridgelawn silt loam, slightly wet, 0 to 2 percent slopes	29.4	31.5%
17	Lohrer silty clay, slightly wet, 0 to 2 percent slopes	19.8	21.2%
19	Hoffmanville silty clay, slightly wet, 0 to 2 percent slopes	7.0	7.5%
20	Scorio silty clay, slightly wet, 0 to 2 percent slopes	23.0	24.6%
213	Havreton silt loam, slightly wet, 0 to 2 percent slopes	10.7	11.4%
Totals for Area of Interest		93.4	100.0%

FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | USA.gov | White House

[Area of Interest \(AOI\)](#)[Soil Map](#)[Soil Data Explorer](#)[Download Soils Data](#)[Shopping Cart \(Free\)](#)[Printable Version](#)[Add to Shopping Cart](#)

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
Lo	Lohler silty clay loam	1.2	2.2%
SaA	Savage silty clay loam, 0 to 2 percent slopes	51.1	97.8%
Totals for Area of Interest		52.2	100.0%

Prewitt / Miller

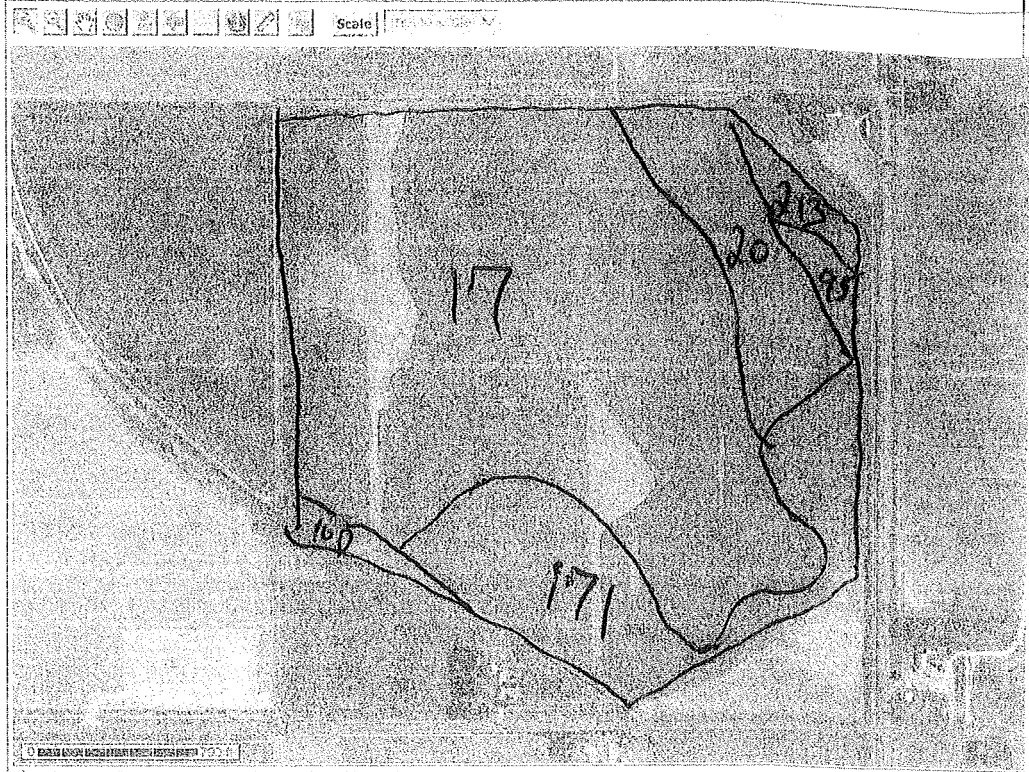
Search

Map Unit Legend

McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
10D	Seroco-Lohler complex, 0 to 15 percent slopes	0.7	0.6%
17	Lohler silty clay, slightly wet, 0 to 2 percent slopes	81.6	68.0%
20	Scorio silty clay, slightly wet, 0 to 2 percent slopes	11.7	9.8%
95	Havrelon silty clay, slightly wet, 0 to 2 percent slopes	1.5	1.2%
171	Lohler silty clay, saline, 0 to 1 percent slopes	21.9	18.3%
213	Havrelon silt loam, slightly wet, 0 to 2 percent slopes	2.5	2.1%
Totals for Area of Interest		120.0	100.0%

Soil Map



Warning: Soil Map may not be valid at this scale.

Pre: H

Area of Interest (AOI)

Soil Map

Soil Data Explorer

Download Soils Data

Shopping Cart (Free)

[Printable Version](#)[Add to Shopping Cart](#)

Search

Map Unit Legend

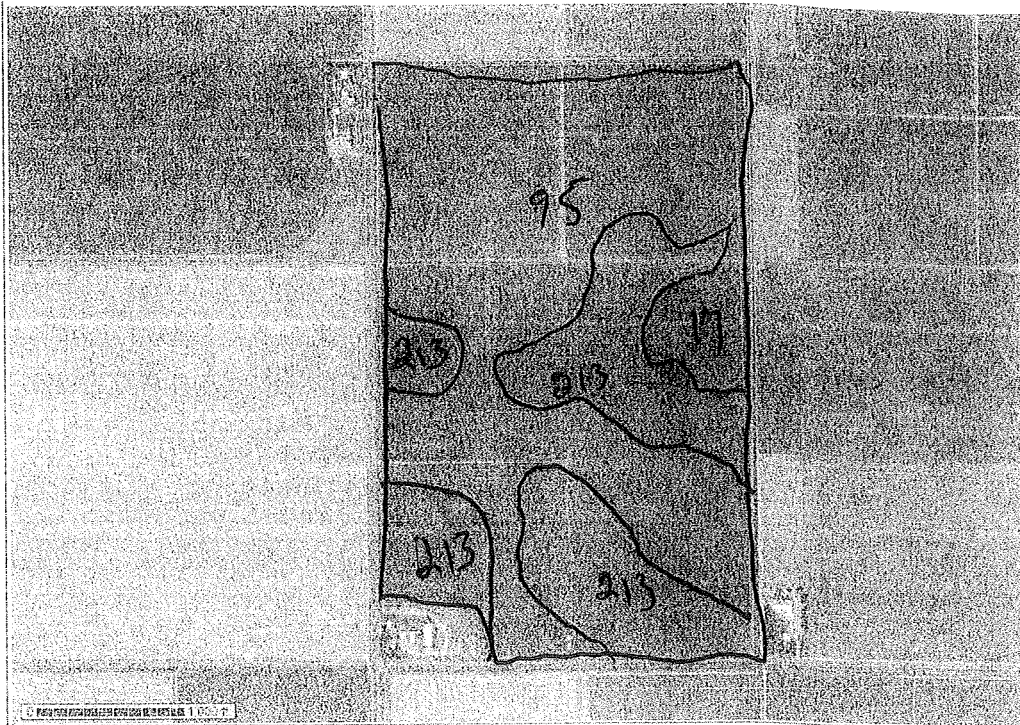
McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17	Lohler silty clay, slightly wet, 0 to 2 percent slopes	11.3	5.1%
95	Havreton silty clay, slightly wet, 0 to 2 percent slopes	135.3	61.5%
213	Havreton silt loam, slightly wet, 0 to 2 percent slopes	73.5	33.4%
Totals for Area of Interest		220.2	100.0%

Soil Map



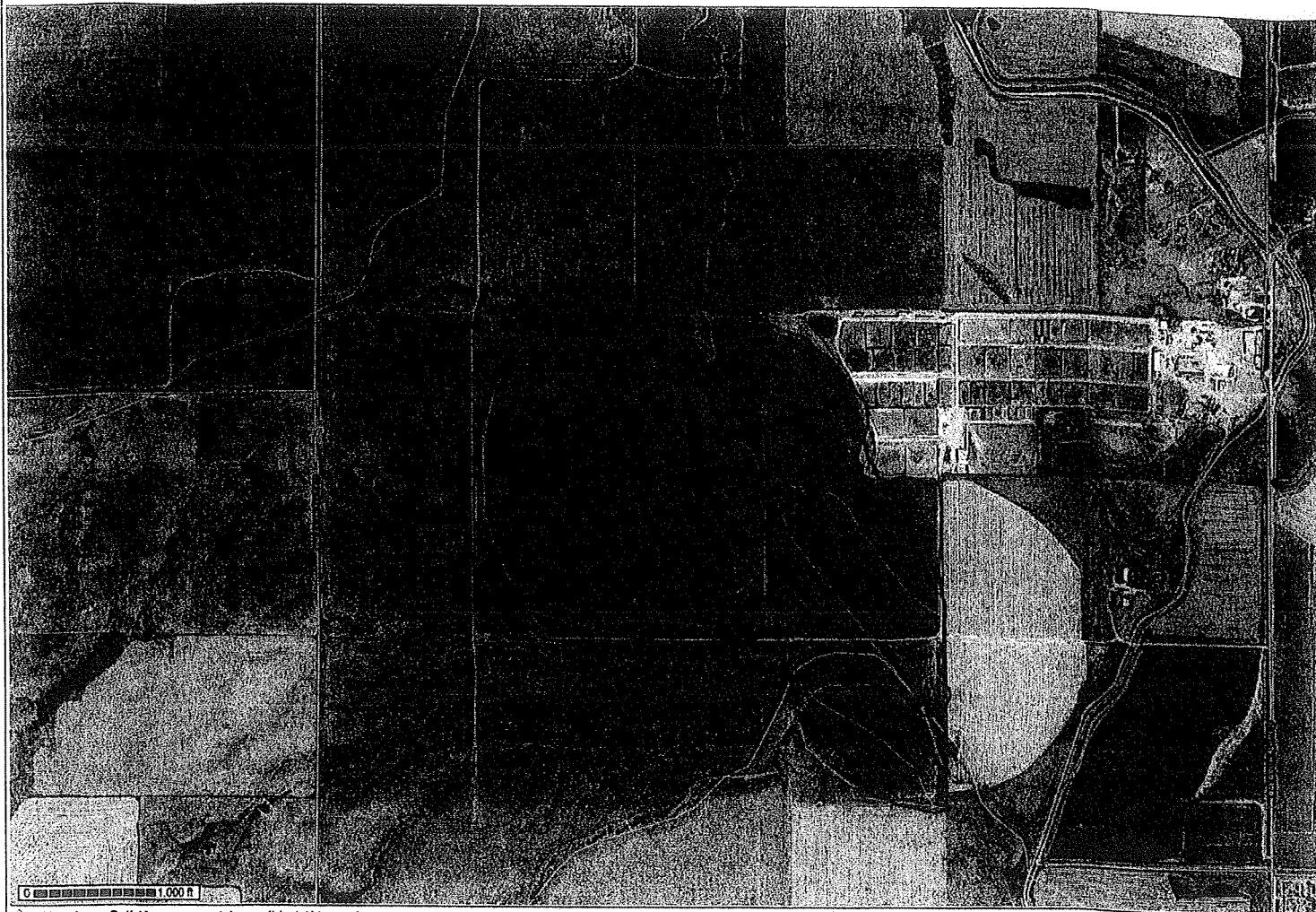
Scale



Warning: Soil Map may not be valid at this scale.

Prewitt

Soil Map



Search

Map Unit Legend

Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
FaA	Farnuf loam, 0 to 2 percent slopes	38.4	16.4%
VdB	Vida clay loam, 1 to 4 percent slopes	0.1	0.0%
VdC	Vida clay loam, 4 to 8 percent slopes	146.5	62.6%
VhD	Vida-Zahill complex, 8 to 15 percent slopes	13.0	5.6%
WmB	Williams loam, 0 to 4 percent slopes	35.9	15.4%
Totals for Area of Interest		233.9	100.0%

Sondano

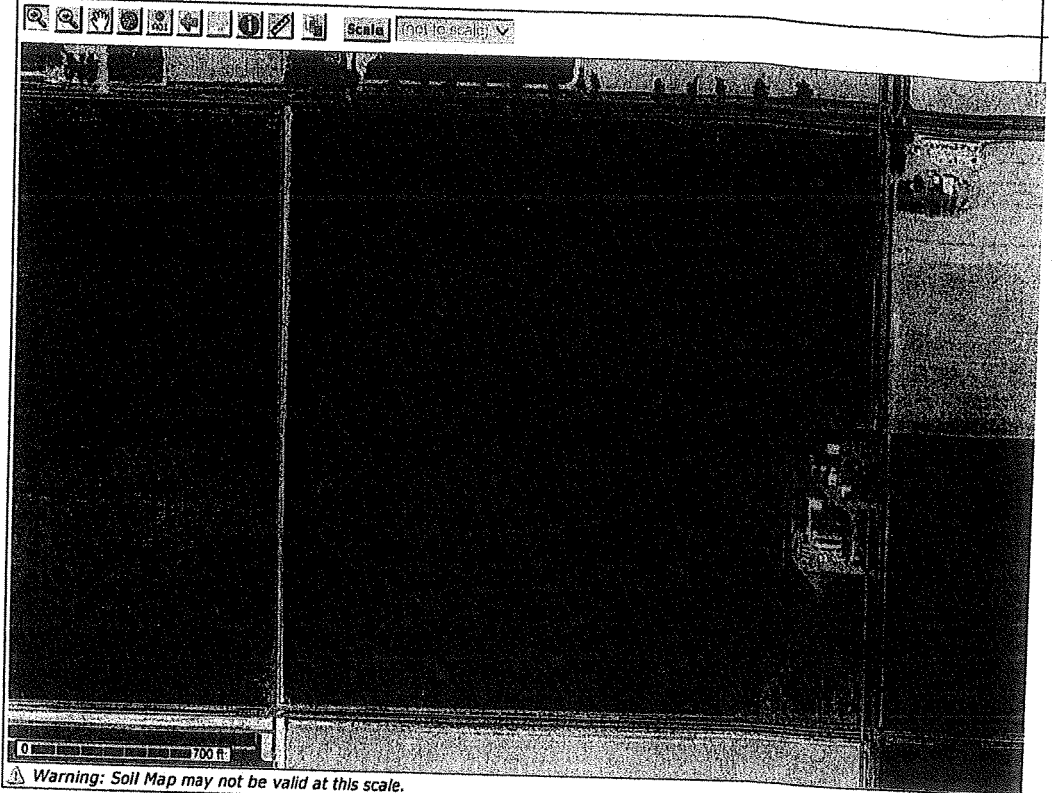
Search

Map Unit Legend

McKenzie County, North Dakota (ND053)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
95	Havrelon silty clay, slightly wet, 0 to 2 percent slopes	122.1	82.7%
213	Havrelon silt loam, slightly wet, 0 to 2 percent slopes	25.6	17.3%
Totals for Area of Interest		147.7	100.0%

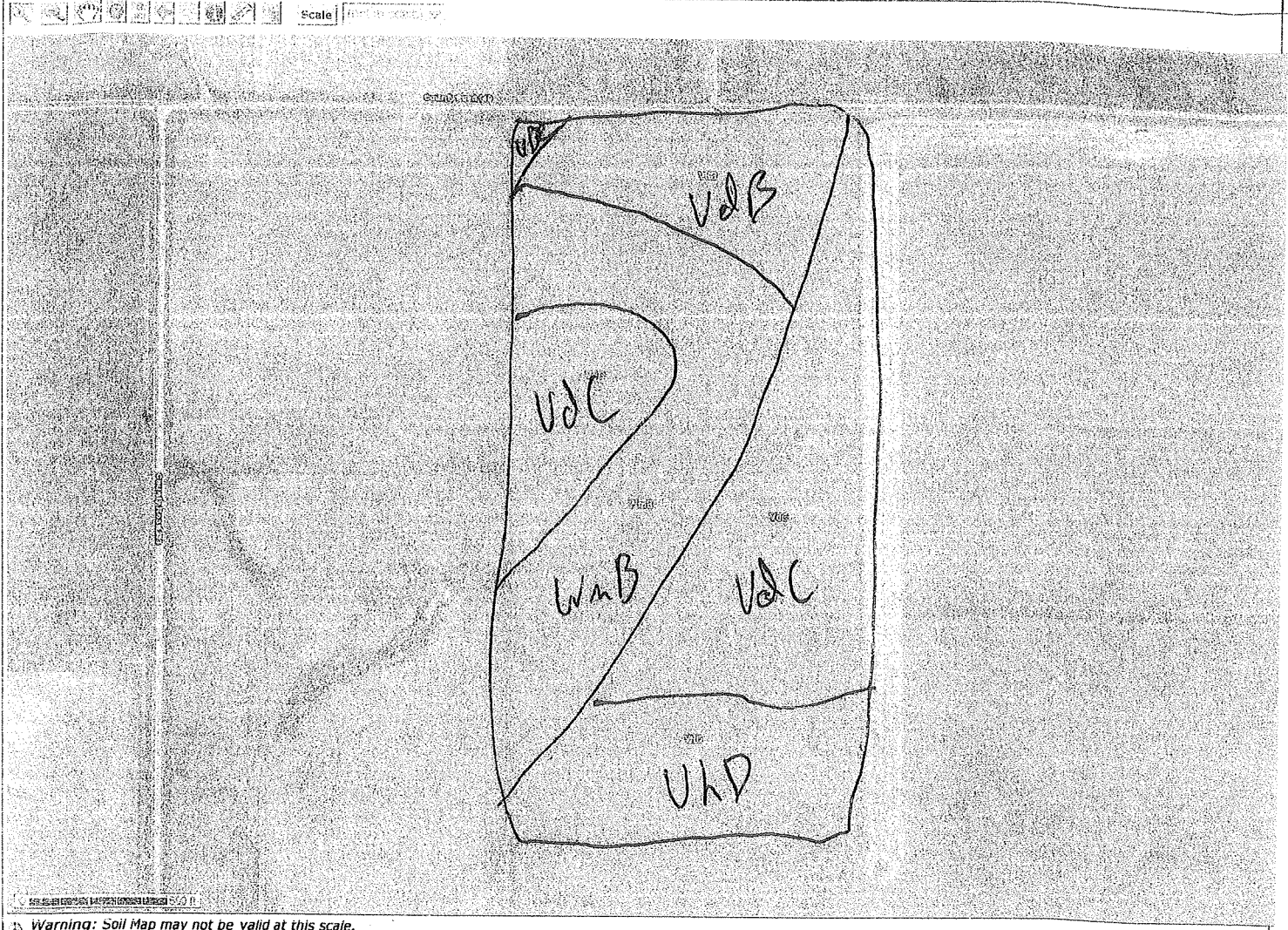
Soil Map



Warning: Soil Map may not be valid at this scale.

Pro:tt

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

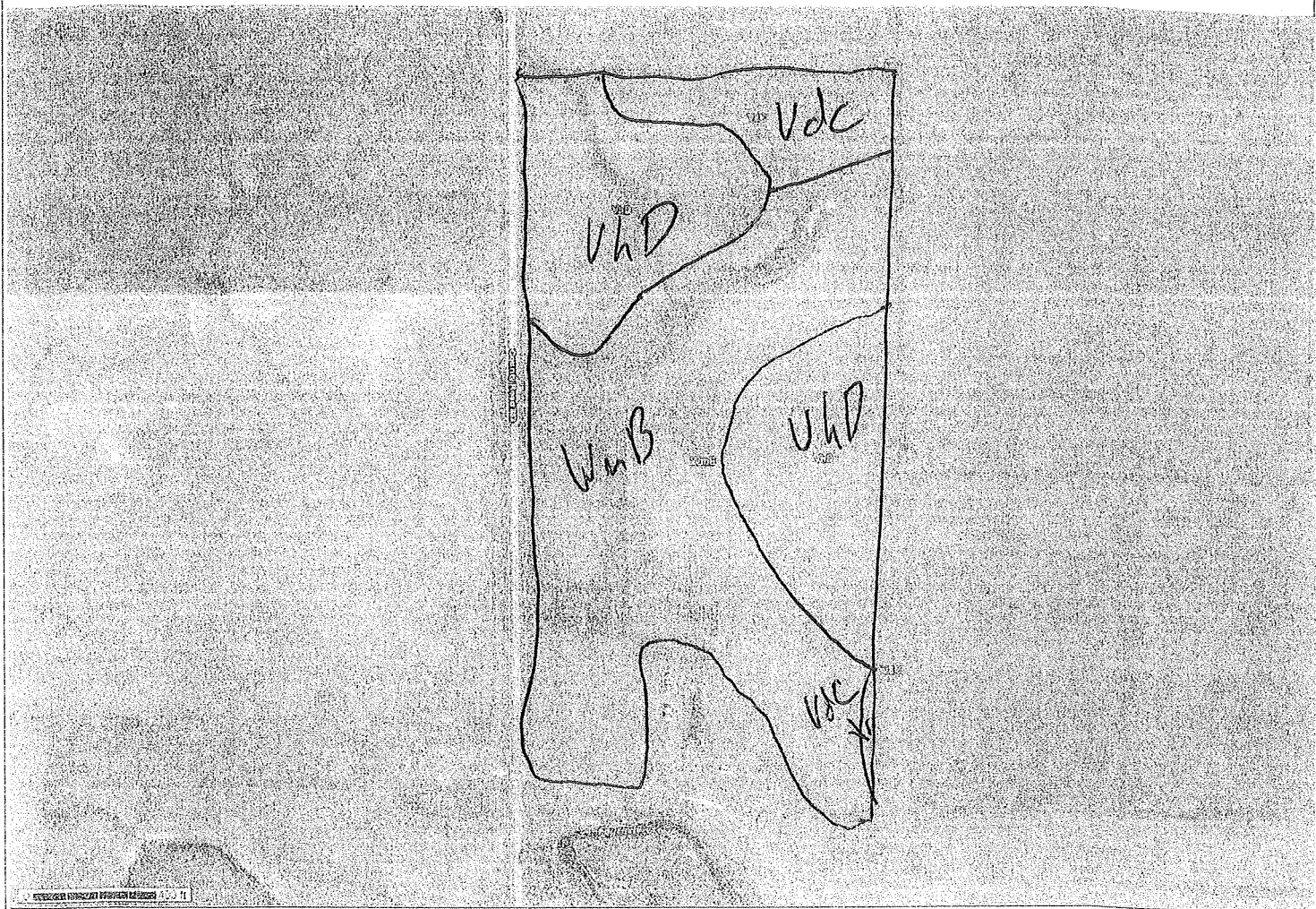
Map Unit Legend

Richland County, Montana (MT083)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
VdB	Vida clay loam, 1 to 4 percent slopes	9.3	11.9%
VdC	Vida clay loam, 4 to 8 percent slopes	29.3	37.6%
VhD	Vida-Zahill complex, 8 to 15 percent slopes	20.9	26.8%
WmB	Williams loam, 0 to 4 percent slopes	18.5	23.7%
Totals for Area of Interest		78.1	100.0%

Hardy Roy land

Soil Map

Scale: 1:100,000



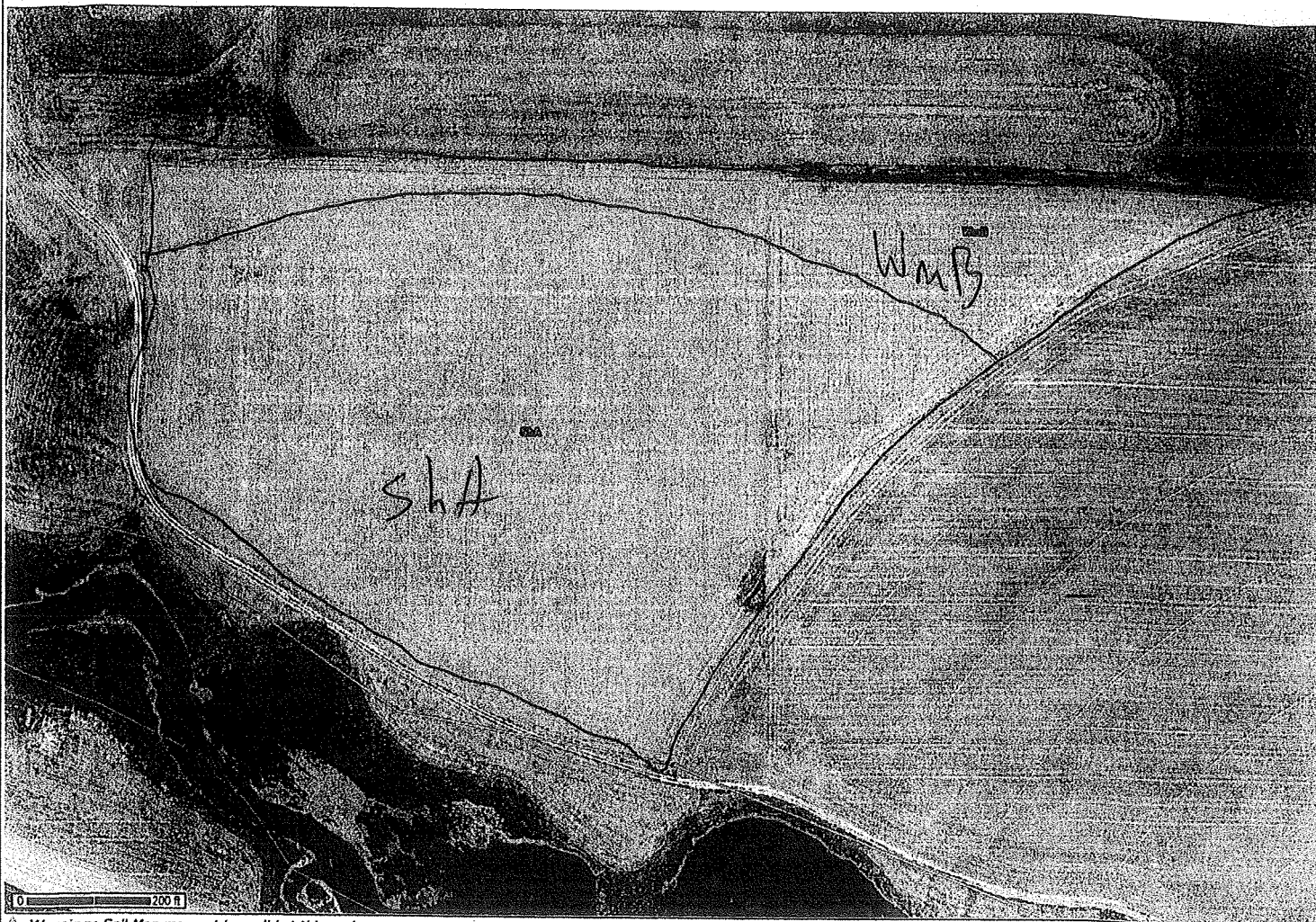
Warning: Soil Map may not be valid at this scale.

Search			
Map Unit Legend			
Richland County, Montana (MT083)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
VdC	Vida clay loam, 4 to 8 percent slopes	5.1	8.2%
VhD	Vida-Zahill complex, 8 to 15 percent slopes	20.1	32.3%
WmB	Williams loam, 0 to 4 percent slopes	37.2	59.6%
Totals for Area of Interest		62.4	100.0%

Hardy Farm
Dry Land

[Area of Interest \(AOI\)](#)[Soil Map](#)[Soil Data Explorer](#)[Download Soils Data](#)[Shopping Cart \(Free\)](#)[Printable Version](#)[Add to Shopping Cart](#)

Soil Map


 Scale:


Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

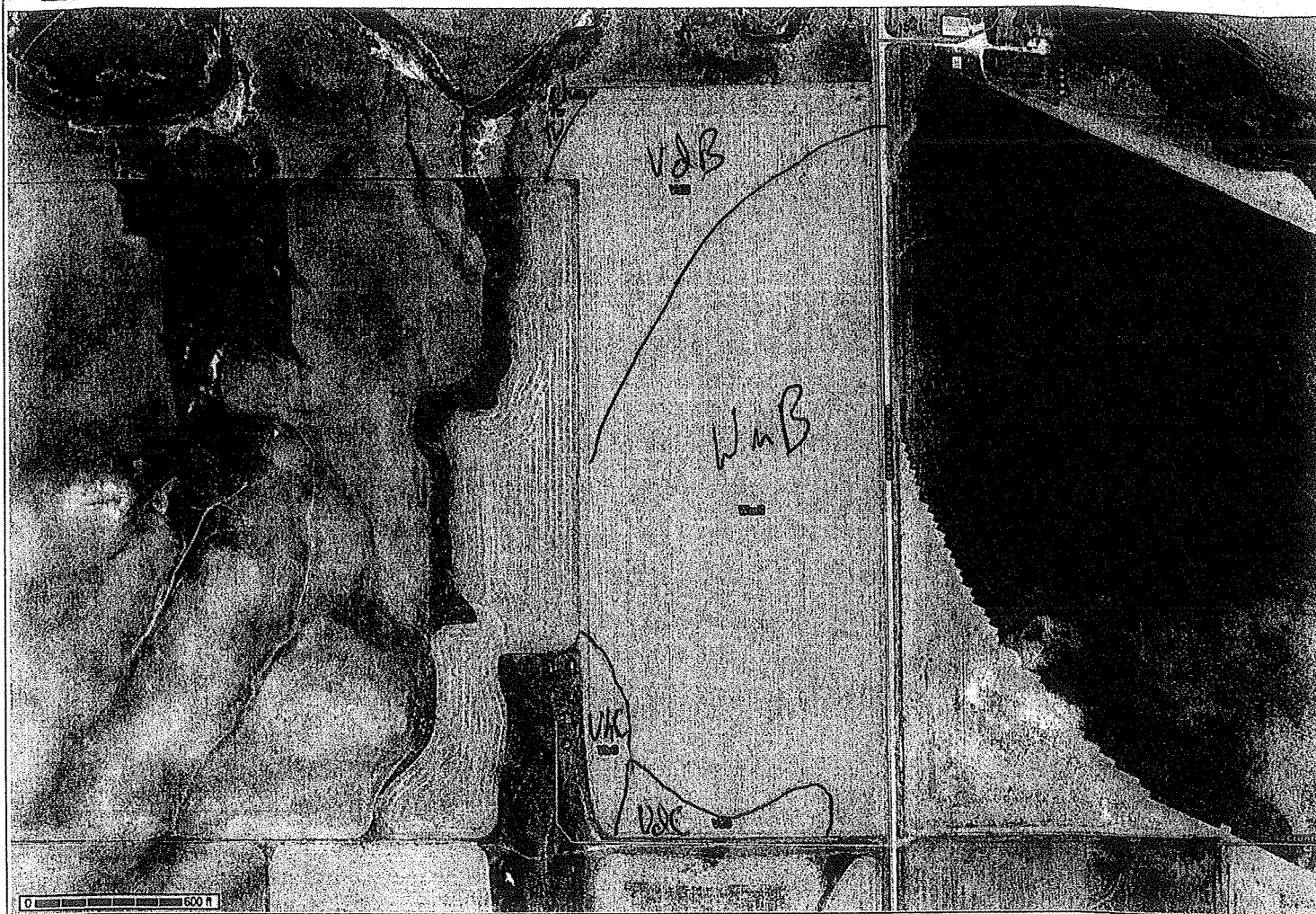
Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ShA	Shambo loam, 0 to 2 percent slopes	20.3	80.7%
WmB	Williams loam, 0 to 4 percent slopes	4.8	19.3%
Totals for Area of Interest		25.2	100.0%

Hardy Farm
Dry Land

[Area of Interest \(AOI\)](#)[Soil Map](#)[Soil Data Explorer](#)[Download Soils Data](#)[Shopping Cart \(Free\)](#)[Printable Version](#)[Add to Shopping Cart](#)

Soil Map

 Scale: 1:10000


Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

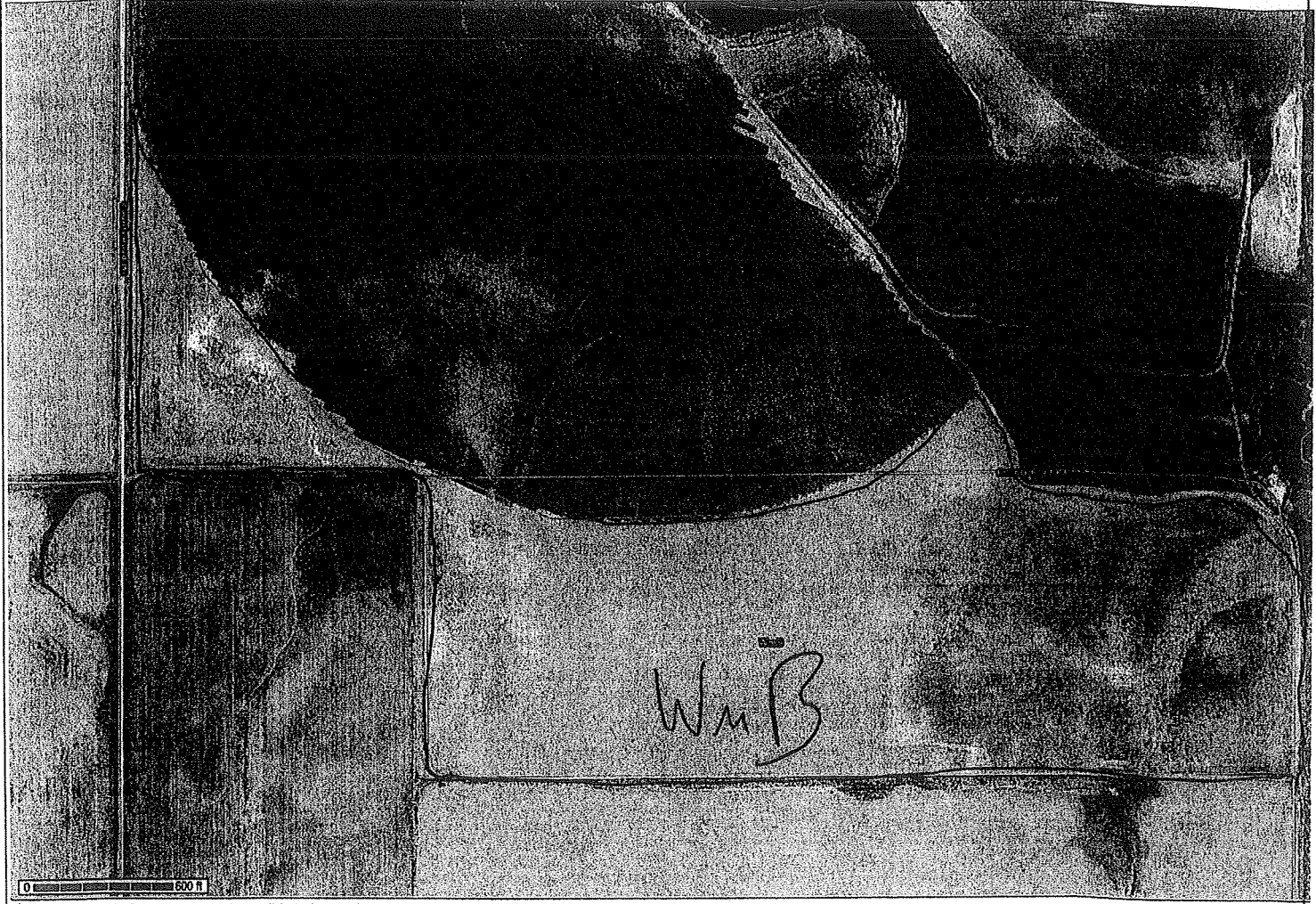
Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ch	Cherry, Havrelon, and Trembles soils, occasionally flooded	0.0	0.0%
Tw	Typic Haplaquents	0.5	0.6%
VdB	Vida clay loam, 1 to 4 percent slopes	18.3	21.5%
VdC	Vida clay loam, 4 to 8 percent slopes	3.1	3.6%
VhC	Vida-Zahill complex, 4 to 8 percent slopes	2.1	2.4%
WmB	Williams loam, 0 to 4 percent slopes	61.1	71.9%
Totals for Area of Interest		85.0	100.0%

Hardy Farm
Dry Level

Soil Map

Scale: 1:100000



Warning: Soil Map may not be valid at this scale.

Search

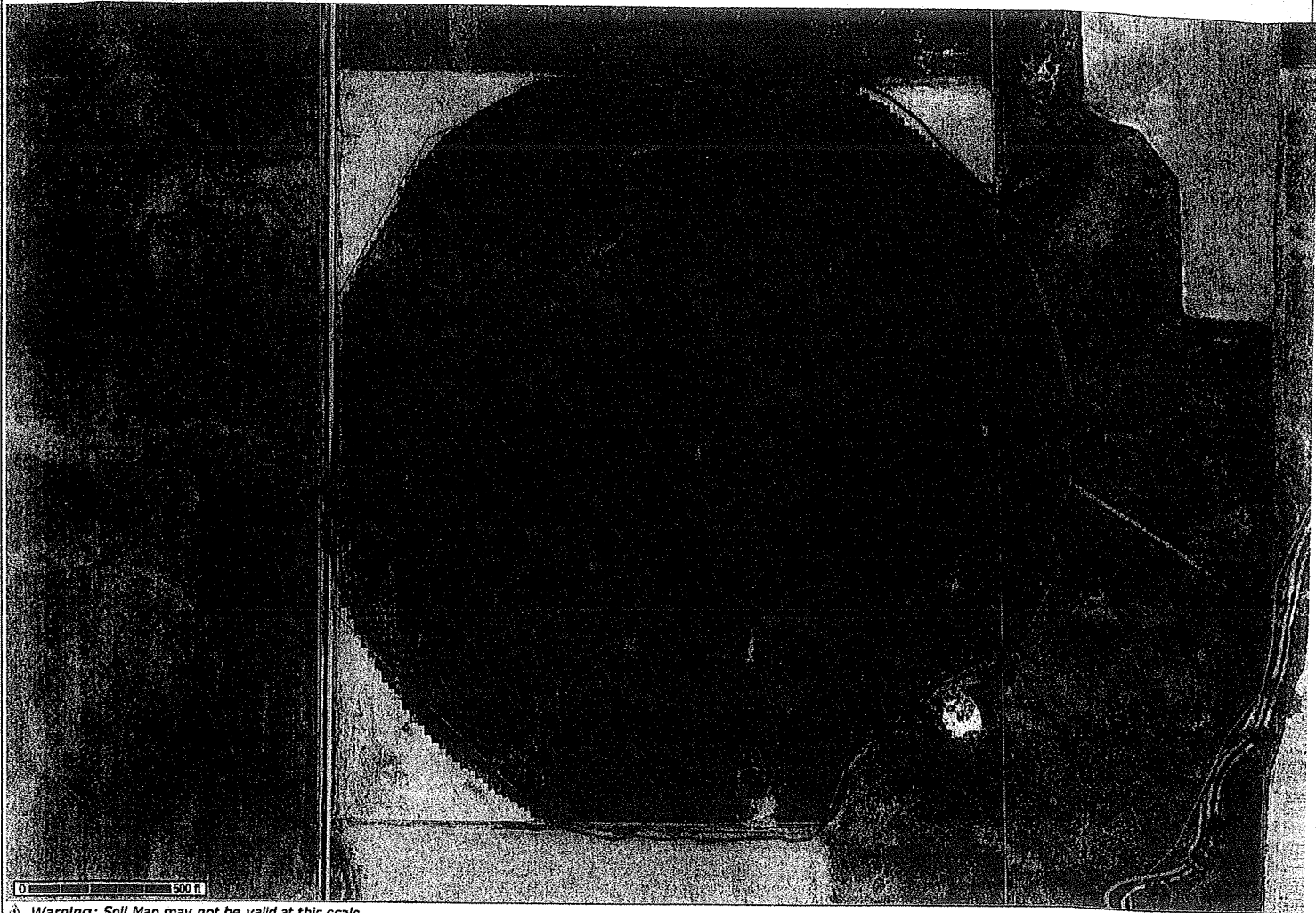
Map Unit Legend

Richland County, Montana (MT083)			
Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
WmB	Williams loam, 0 to 4 percent slopes	124.2	100.0%
Totals for Area of Interest		124.2	100.0%

Hardy Farm
Dry Land

Soil Map

Scale 100 to 500 ft



Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

Hardy Farm
Irrigated

McKenzie County, North Dakota (ND053)

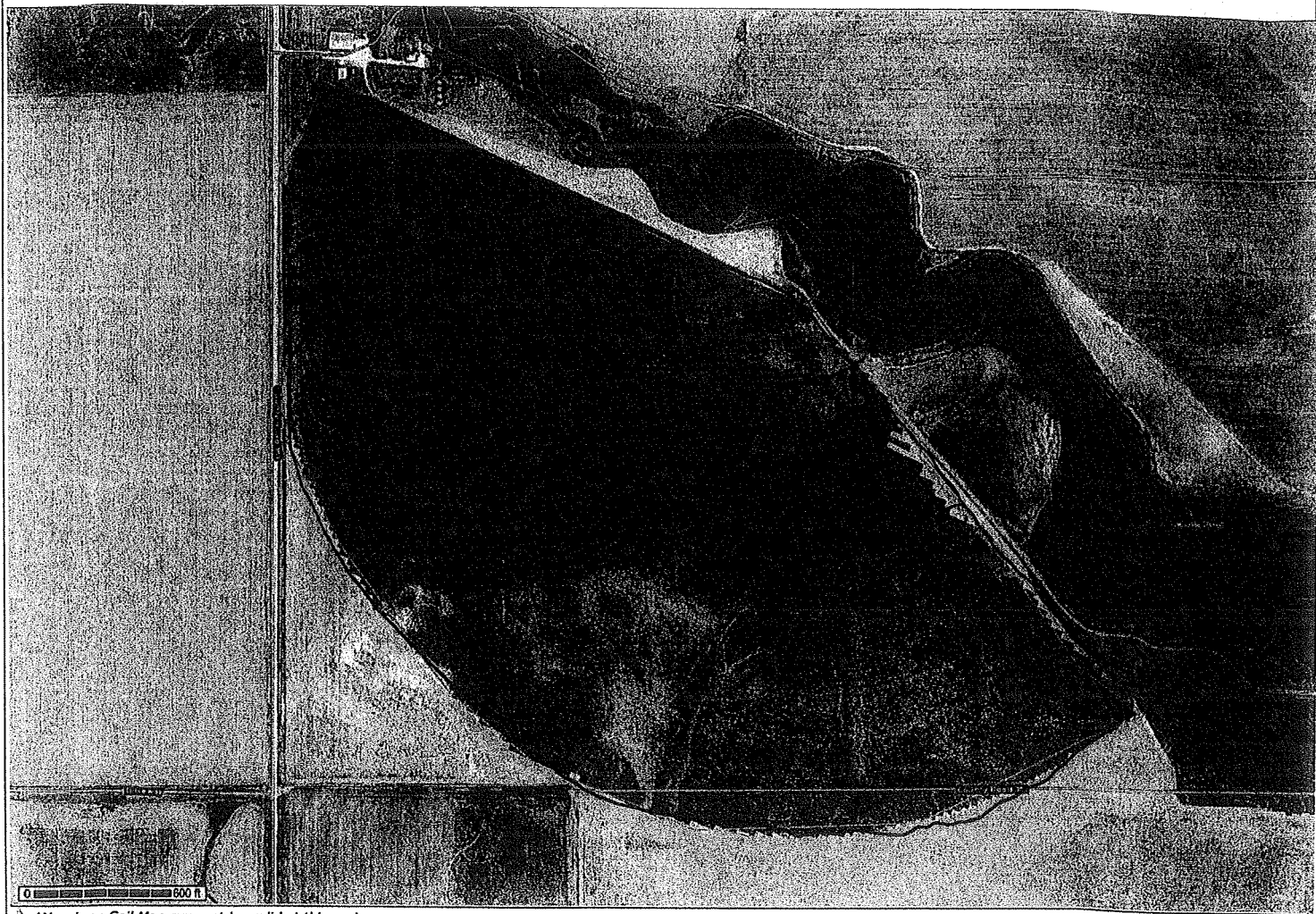
Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
41B	Williams-Bowbells loams, 3 to 6 percent slopes	2.5	1.9%
44D	Zahl-Williams loams, 9 to 15 percent slopes	1.4	1.0%
44E	Zahl-Williams loams, 15 to 25 percent slopes	1.5	1.1%
Subtotals for Soil Survey Area		5.4	4.0%

Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
VdC	Vida clay loam, 4 to 8 percent slopes	25.6	19.2%
WmB	Williams loam, 0 to 4 percent slopes	100.2	75.0%
ZaF	Zahill loam, 15 to 65 percent slopes	2.5	1.8%
Subtotals for Soil Survey Area		128.2	96.0%
Totals for Area of Interest		133.6	100.0%

[Area of Interest \(AOI\)](#)[Soil Map](#)[Soil Data Explorer](#)[Download Soils Data](#)[Shopping Cart \(Free\)](#)[Printable Versions](#)[Add to Shopping Cart](#)

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

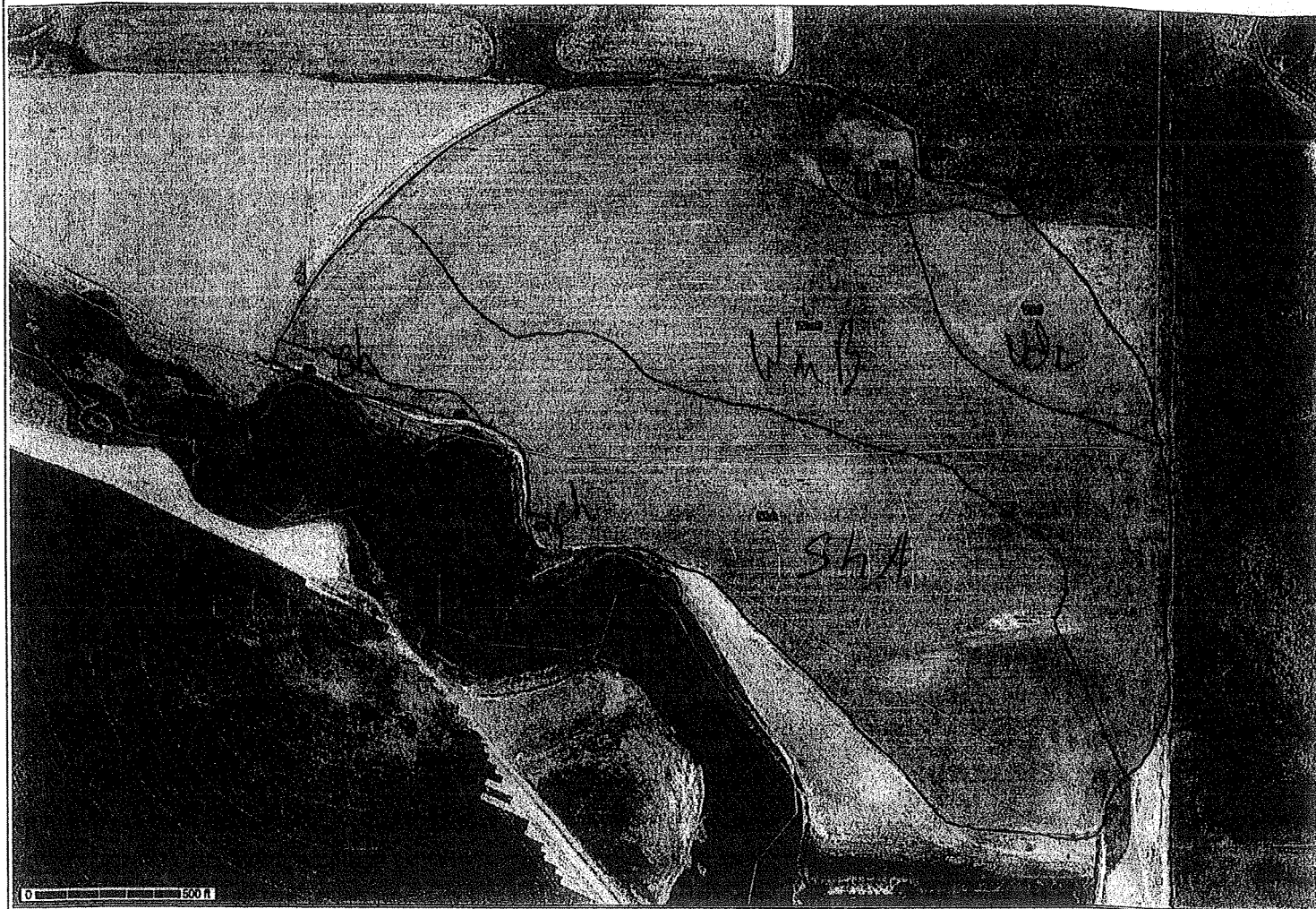
Map Unit Legend

Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
ShA	Shambo loam, 0 to 2 percent slopes	11.5	6.9%
VdB	Vida clay loam, 1 to 4 percent slopes	7.4	4.4%
W	Water	1.1	0.7%
WmB	Williams loam, 0 to 4 percent slopes	147.9	88.1%
Totals for Area of Interest		167.9	100.0%

Hardy Farm
Irrigated

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

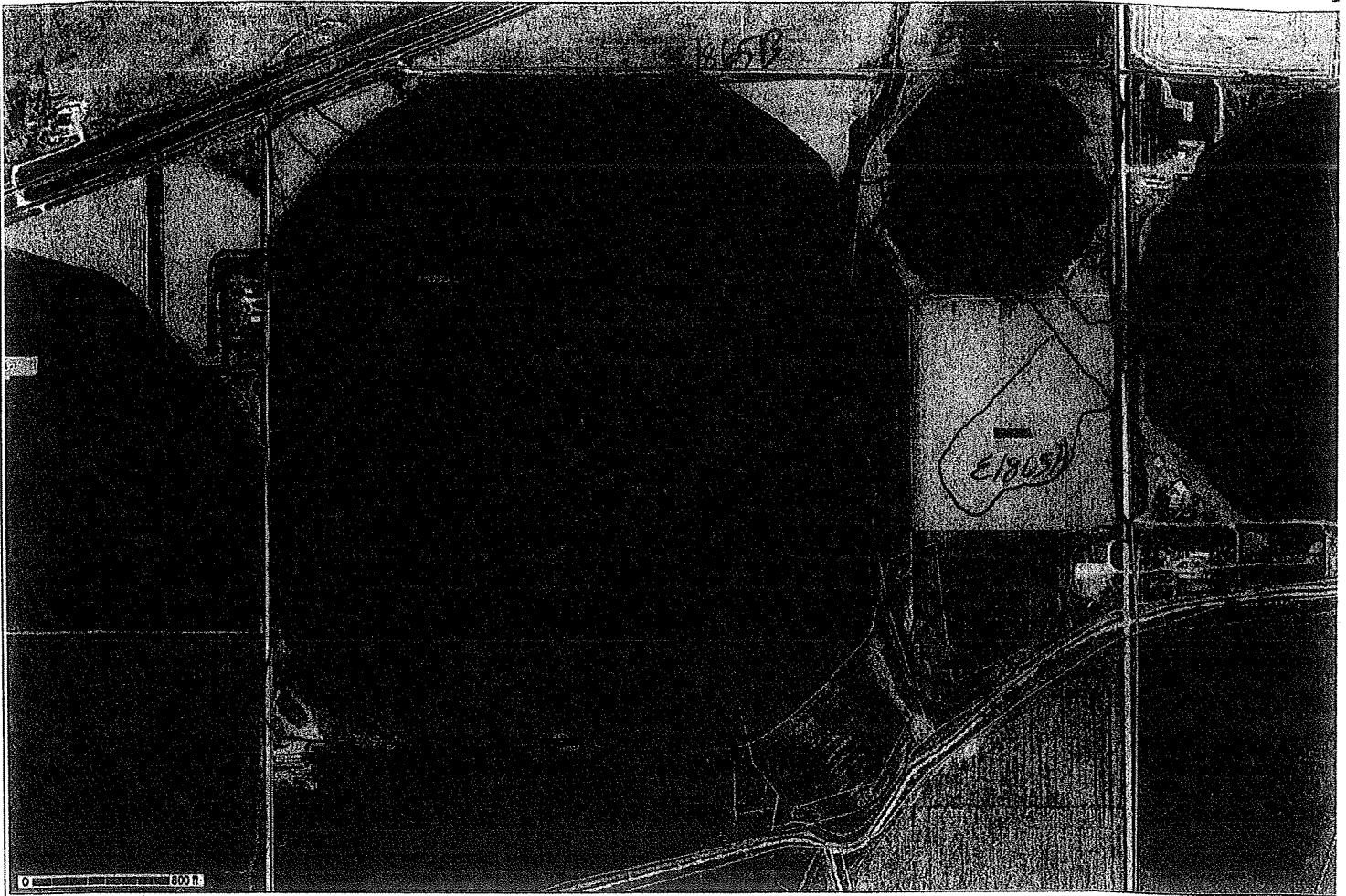
Map Unit Legend

Richland County, Montana (MT083)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ch	Cherry, Havrelon, and Trembles soils, occasionally flooded	0.3	0.2%
ShA	Shambo loam, 0 to 2 percent slopes	51.8	45.7%
VdC	Vida clay loam, 4 to 8 percent slopes	7.5	6.7%
VhD	Vida-Zahill complex, 8 to 15 percent slopes	3.2	2.8%
WmB	Williams loam, 0 to 4 percent slopes	50.5	44.5%
Totals for Area of Interest		113.3	100.0%

hardy Farm
irrigated

Soil Map



Warning: Soil Map may not be valid at this scale.

Search

Map Unit Legend

Williams County, North Dakota (ND105)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
E0821A	Lawther silty clay, 0 to 2 percent slopes	196.7	45.2%
E0835A	Savage-Grail silty clay loams, 0 to 2 percent slopes	114.4	26.3%
E1865A	Tally-Parshall fine sandy loams, 0 to 2 percent slopes	12.4	2.8%
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	0.7	0.2%
E2145A	Shambo loam, 0 to 2 percent slopes	103.9	23.9%
E3203C	Cherry silt loam, 6 to 9 percent slopes	6.8	1.6%
Totals for Area of Interest		434.9	100.0%

Andersen Farm

400 Acres Irrigated